

TA -439

x-resurfacing

Fred 74
Lee 11/5

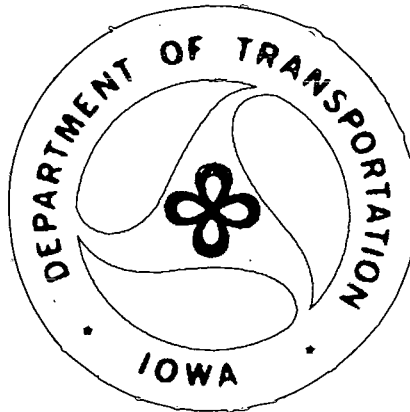
Warren - Last
1/11

~~A-36-A~~
Library

FIBROUS CONCRETE RESURFACING

GREENE COUNTY, IOWA

October, 1976



Iowa Department of Transportation
Highway Division
Materials - Research
Project HR-165

IOWA DEPARTMENT OF TRANSPORTATION
Highway Division
Office of Operations Research

Research Project HR-165
FIBROUS CONCRETE, GREENE COUNTY, IOWA

The three miles of fibrous concrete resurfacing in Greene County, Iowa were placed in September and early October, 1973. It was recognized in advance that cracking and other performance characteristics of the fibrous concrete sections and of the control sections would be major factors in the evaluation of the project.

A low level aerial survey was made of the old pavement. During construction of the resurfacing, the aerial survey was checked to insure that cracks in the old pavement were referenced to the 100 ft. station marks placed in the resurfacing.

Crack surveys have been conducted on dates indicated below. Additional cracks found at each subsequent survey are shown in a color matching the date notation.

April, 1974

November, 1974

October, 1975

October, 1976

FIBROUS SECTIONS

AS BUILT

Fiber Size (in.)			1												2 1/2											
Fiber Content (lbs.)			60			100			160			60			100			160								
Admixture Type			O	N	R	O	N	R	O	N	R	O	N	R	O	N	R	O	N	R						
3	600	U																								
		B																								
		P	7	13		9	24			18	19		16	37												
	750	U														11	25									
		B					12			23		← Bridge			21					← Chem. Comp.						
		P		17		10				20			8													
	500+ 234 FA	U																								
		B																								
		P					14	40		22		↓ On Grade 40 A ←			15											
2	600	U																								
		B																								
		P					27 31			33																
	750	U														35										
		B					29 28									36										
		P					32			30 34										26						
	500+ 234 FA	U																								
		B																								
		P																								
Pavement Thick. (in.)	Cement Content (lbs.)	Bonding Condition	<u>Admixture</u> O None N Water Reducer R Set Retarder												<u>Bonding</u> P Partial B Bonded U Unbonded											

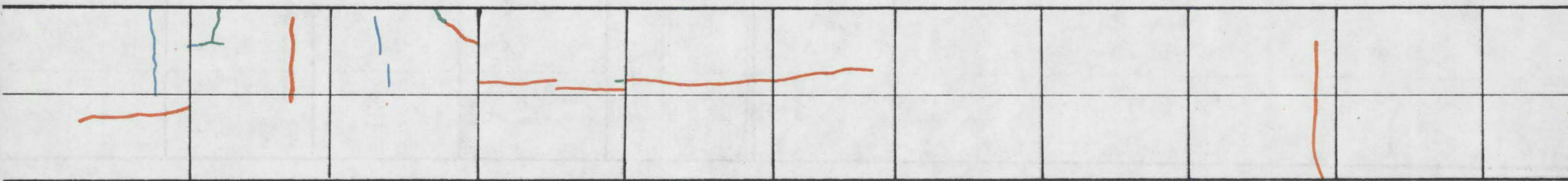
NON-FIBROUS SECTIONS

Sections 1 and 39 5 in. Type A Plain Partial Bond No Admix.	Sections 2 and 38 4 in. Type A 6x6 Mesh Partial Bond No Admix.	Section 3 4 in. Type A CRC Mesh Anchor Bonded No Admix.	Section 4 4 in. Type A CRC Mesh Unbonded No Admix.	Section 5 3 in. Type A CRC Mesh Unbonded No Admix.	Section 6 3 in. Type A CRC Mesh Anchor Bonded No Admix.
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00 + 00

Section 1

Pavement - A-4
Bond - Partial
Cement - 569 lb.
Thickness - 5"



0

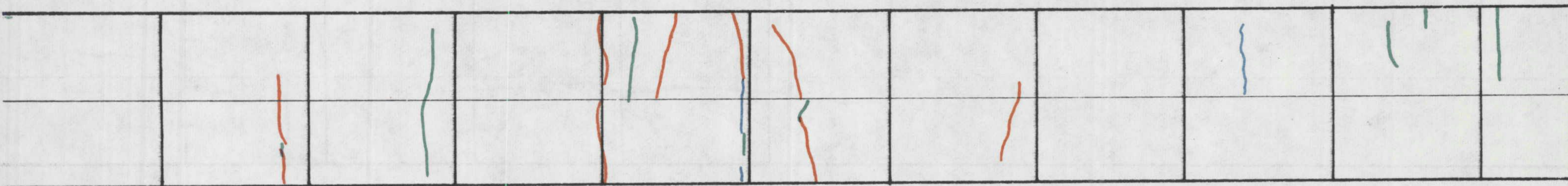
Contraction Joint

1

2

Scale 1" = 20'

N



2

3

4

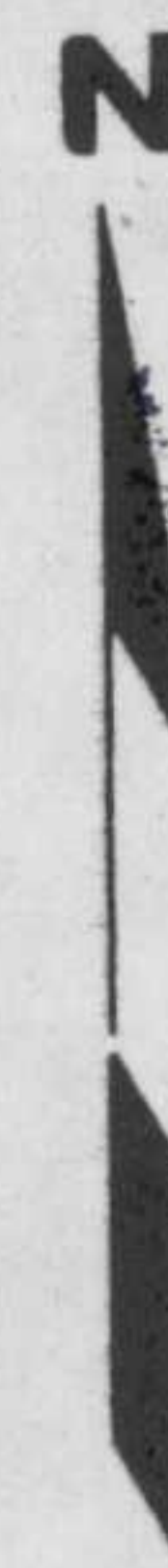
4 + 04

Transition

4 + 67

Section 2
(Mesh)

Pavement - A-4
Bond - Partial
Cement - 569 lb.
Thickness - 4"

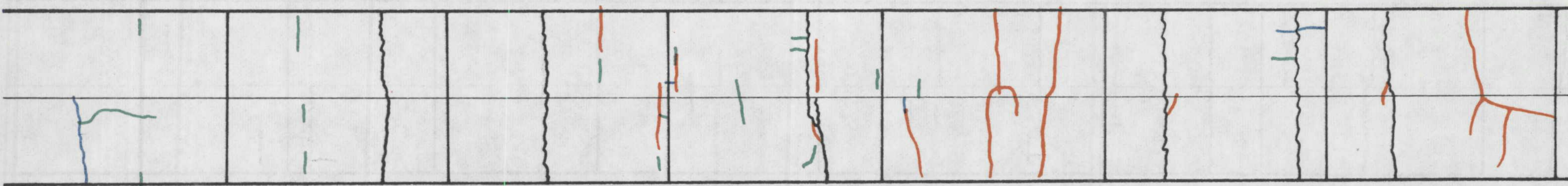


4

5

6

2



6

6

7

7

8

8

8 + 99

Section 3
(CRC Anchor)

Pavement - A-4
Bond - Bonded
Cement - 569 lb.
Thickness - 4"

N

Expansion Joint 9

∨ indicates crack initiator location

8

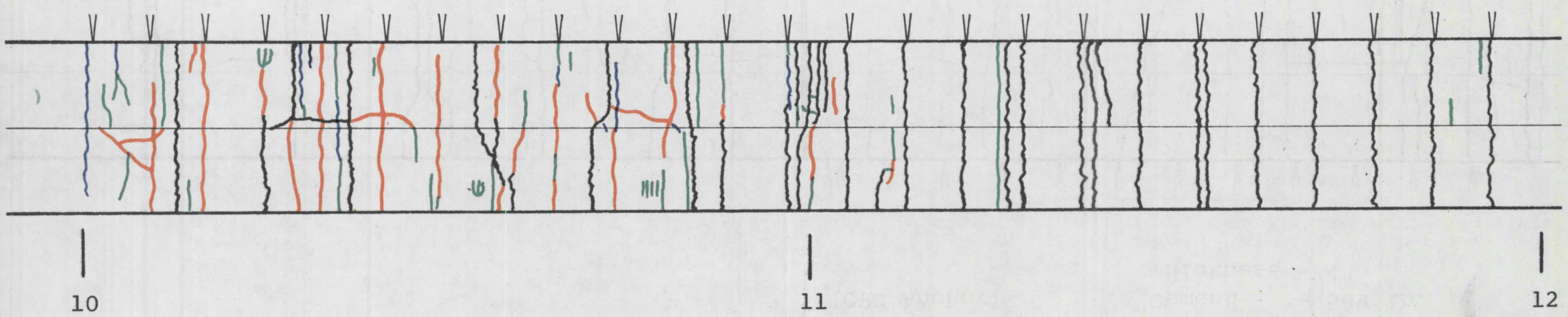
9

10

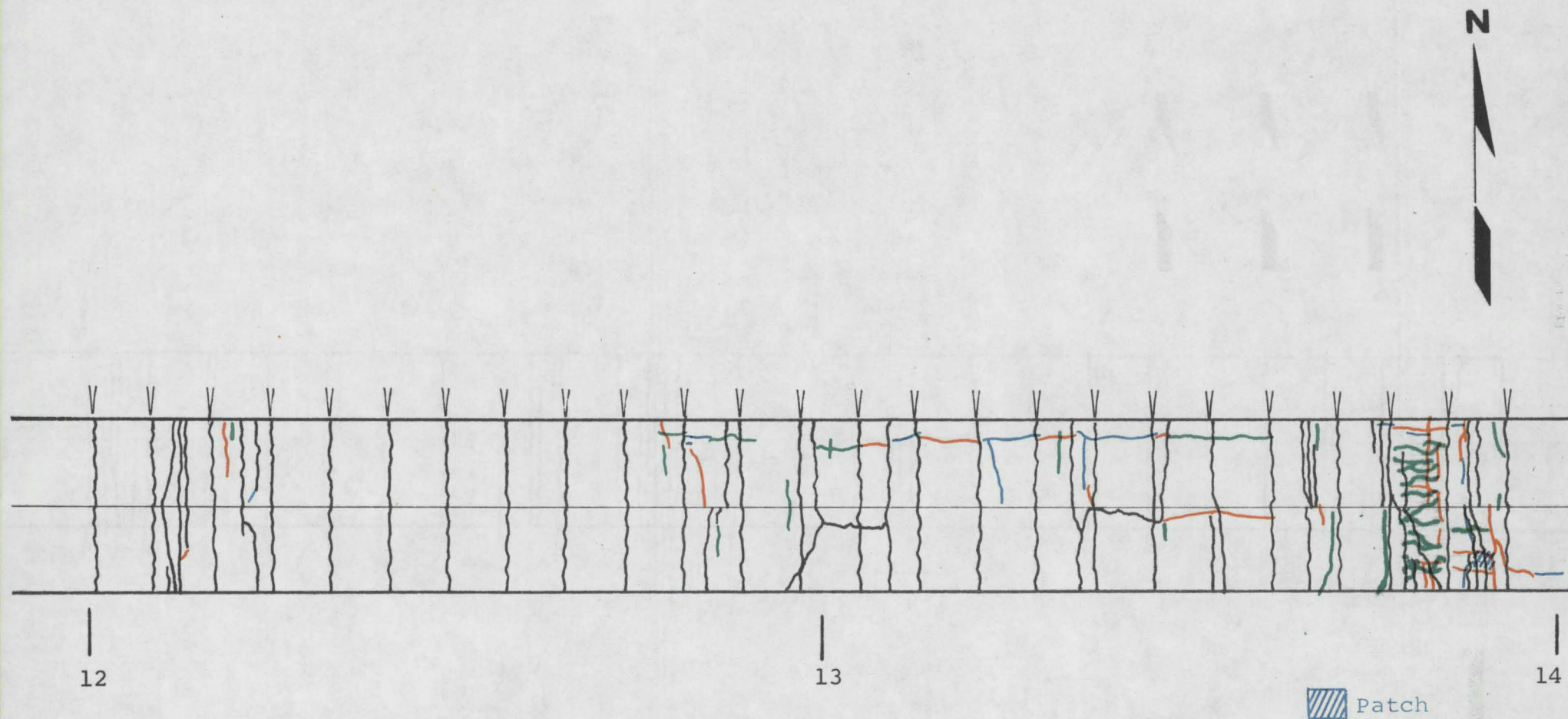
10 + 98

Section 4
(CRC)

Pavement - A-4
Bond - Unbonded
Cement - 569 lb.
Thickness - 4"

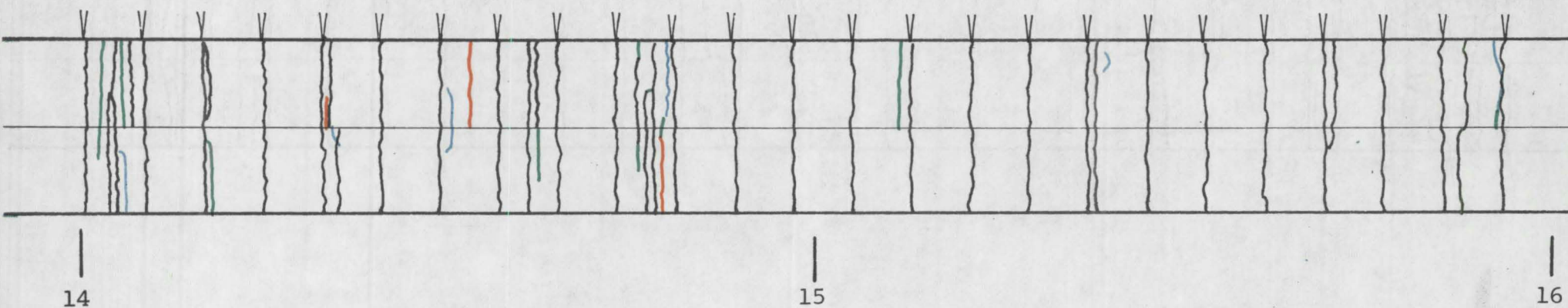


> indicates crack initiator location



∨ indicates crack initiator location

N



> indicates crack initiator location

16 + 65

Transition

16 + 91

16

17

18

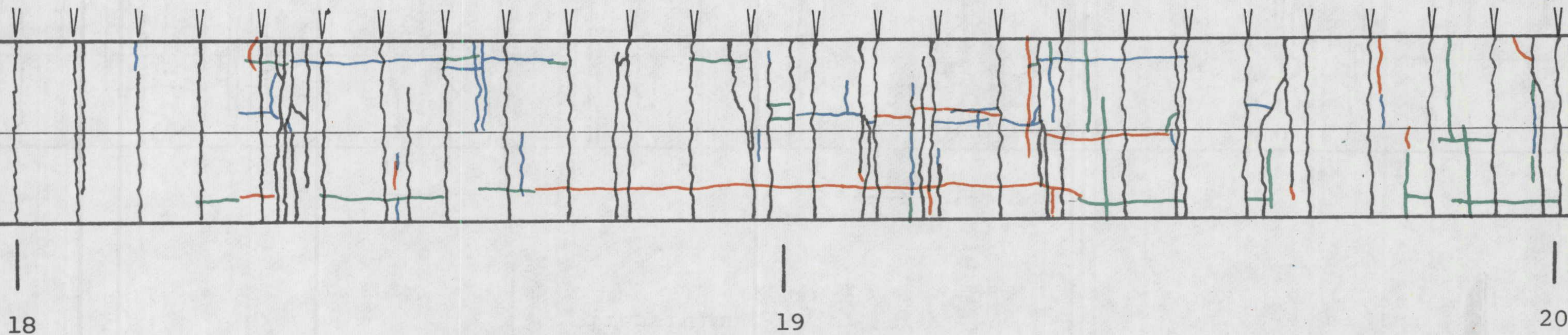
Patched blowup

> indicates crack initiator location

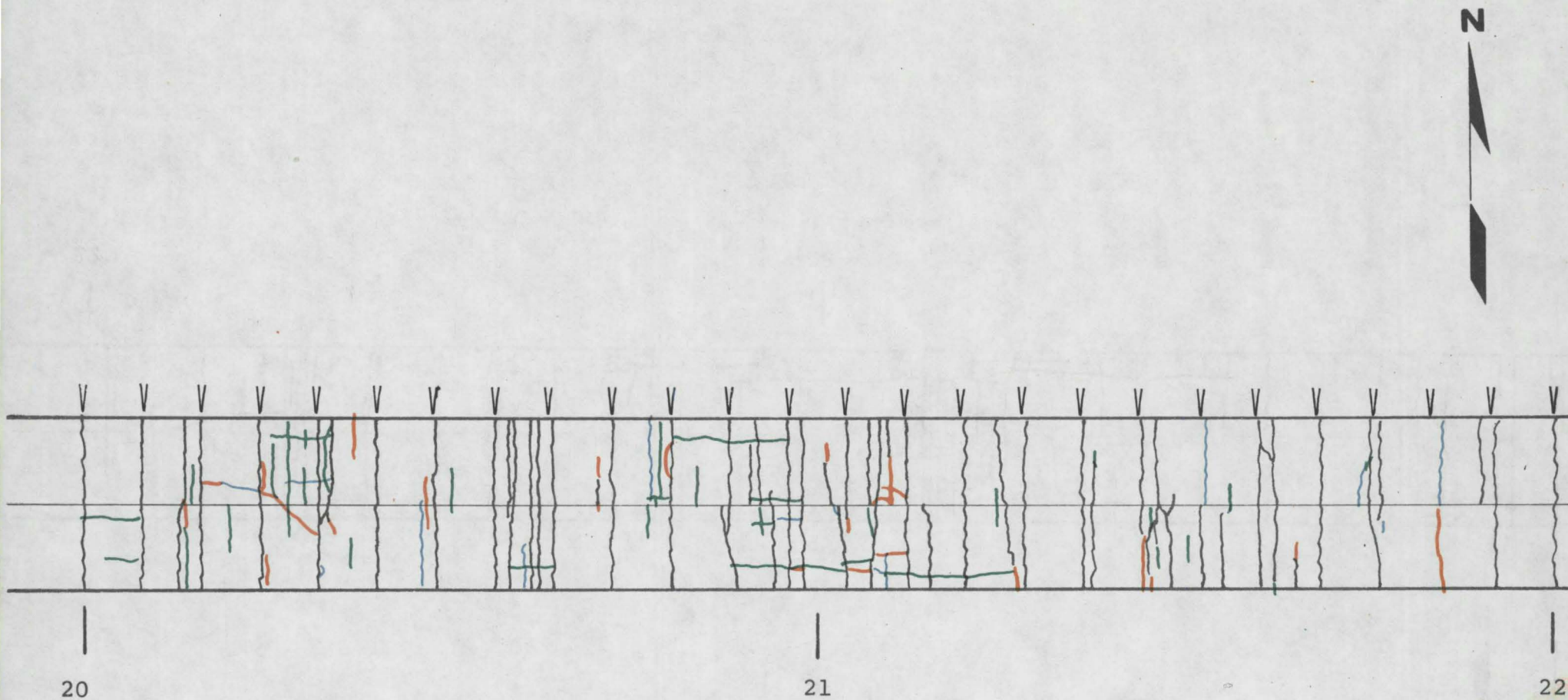


Section 5
(CRC)

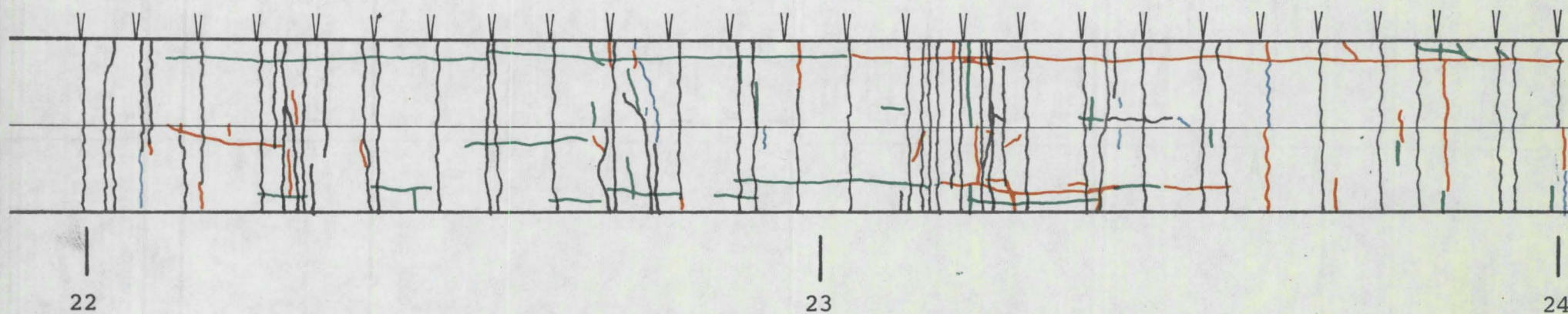
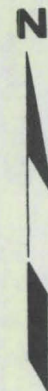
Pavement - A-4
Bond - Unbonded
Cement - 569 lb.
Thickness - 3"



> indicates crack initiator location



∨ indicates crack initiator location



> indicates crack initiator location

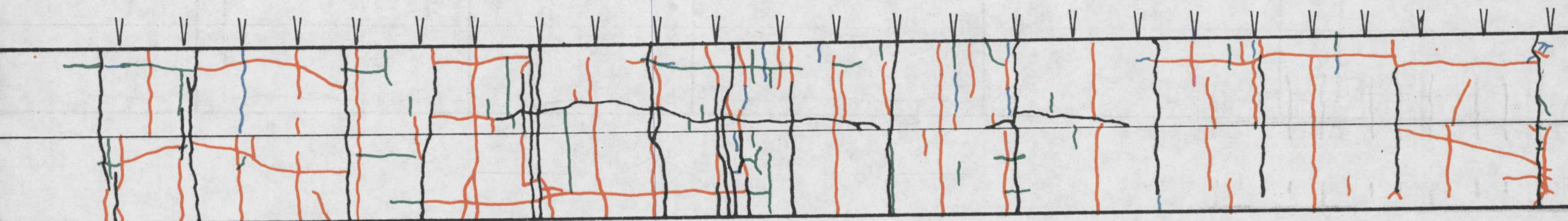
24 + 00

Section 6
(CRC Anchor)

Pavement - A-4
Bond - Bonded
Cement - 569 lb.
Thickness - 3"

25 + 85

N



24

25

26

∨ indicates crack initiator location

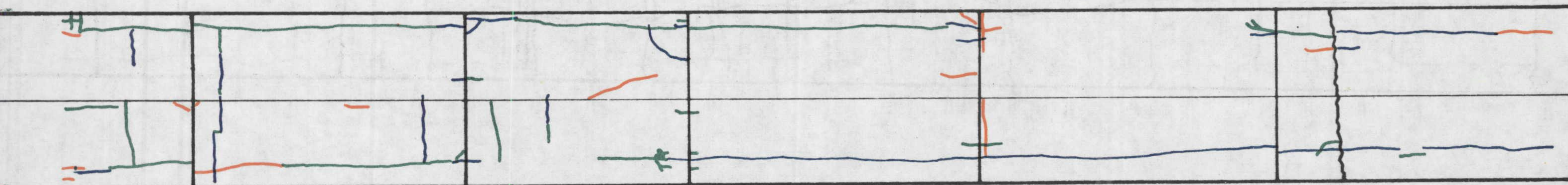


26 + 58

Transition

Section 7
(Fibrous)

Bond - Partial
Cement - 600 lb.
Fiber - 1', 60 lb.
Thickness - 3"



26

27

28

N



28

29

30

N

31 + 61

Transition

30

31

32

32 + 16

Section 8
(Fibrous)

Bond - Partial
Cement - 750 lb.
Fiber - 2½", 60 lb.
Thickness - 3"

33 + 57

Transition

N



32

33

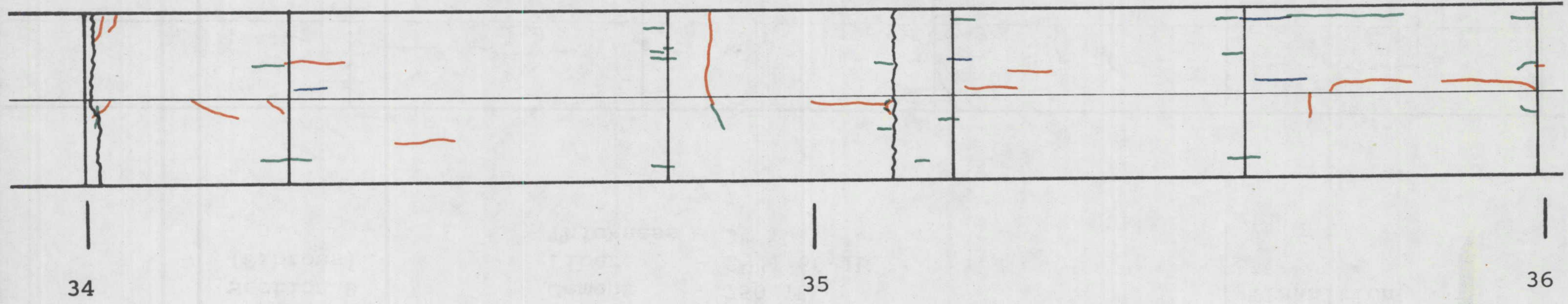
34



34 + 28

Section 9
(Fibrous)

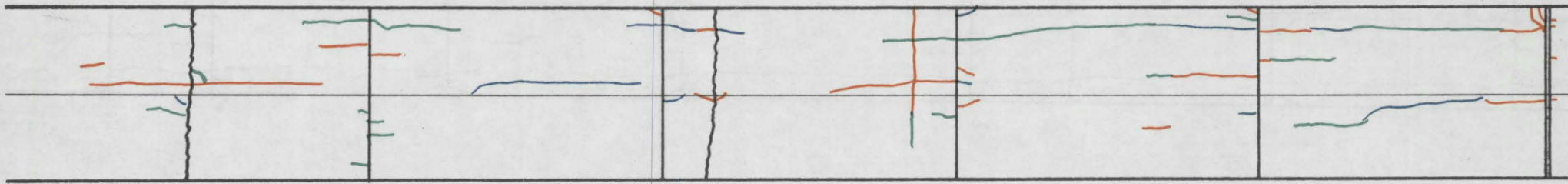
Bond - Partial
Cement - 600 lb.
Fiber - 1", 100 lb.
Thickness - 3"



38

37

36





38 + 19

Transition

38 + 75

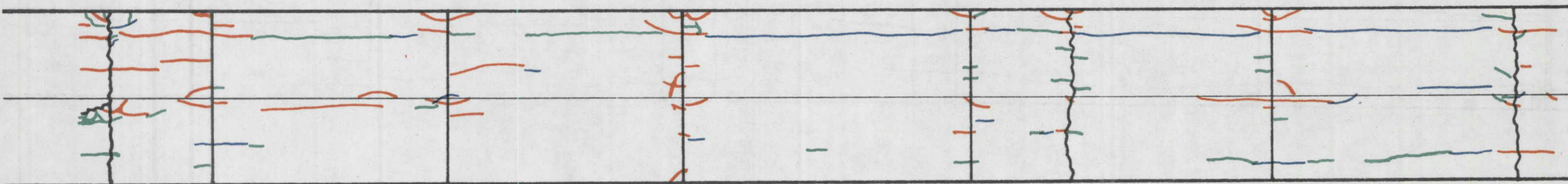
Section 10
(Fibrous)

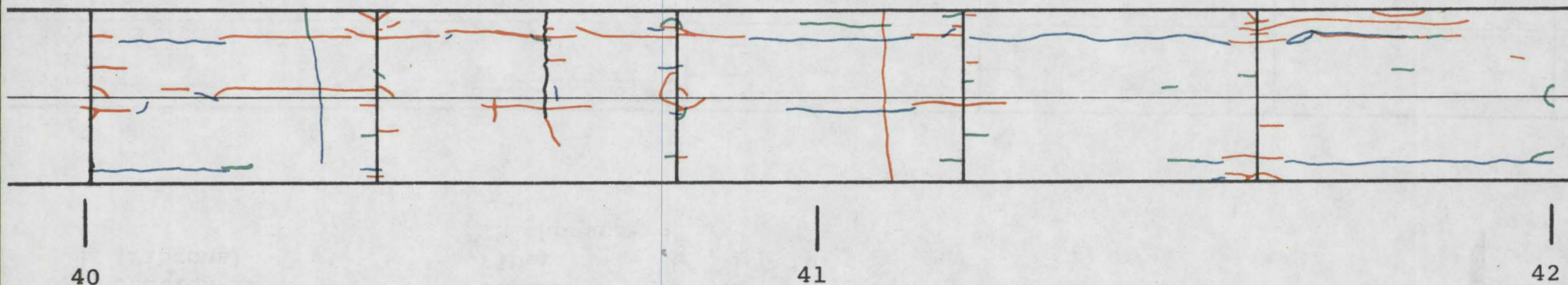
Bond - Partial
Cement - 750 lb.
Fiber - 1", 100 lb.
Thickness - 3"

38

39

40

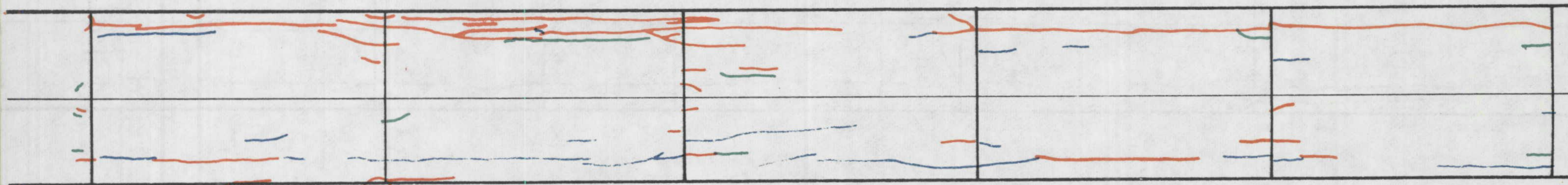




42 + 00

Section 11
(Fibrous)

Bond - Unbonded
Cement - 750 lb.
Fiber - 2½", 100 lb.
Thickness - 3"



42

43

44

44

45

46

45 + 60

Transition

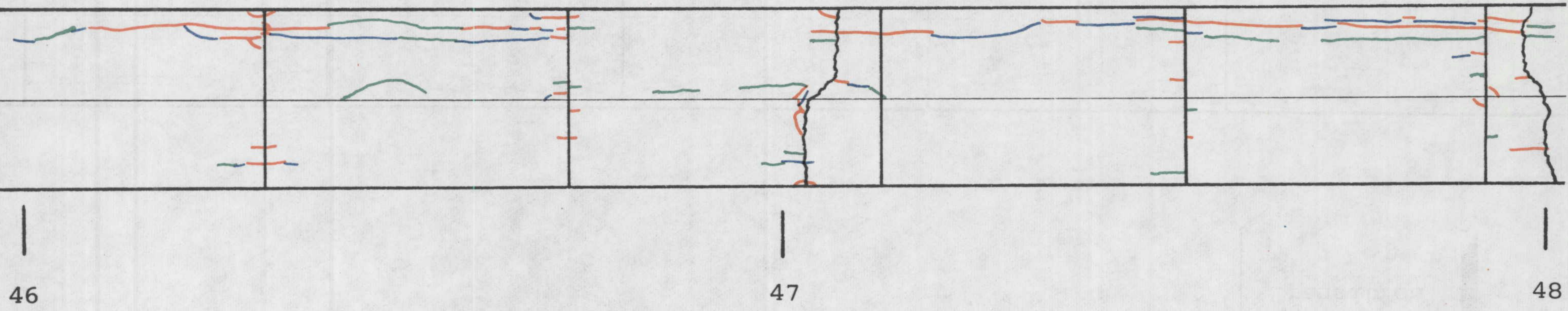
N



46 + 04

Section 12
(Fibrous)

Bond - Bonded
Cement - 750 lb.
Fiber - 1", 100 lb.
Thickness - 3"



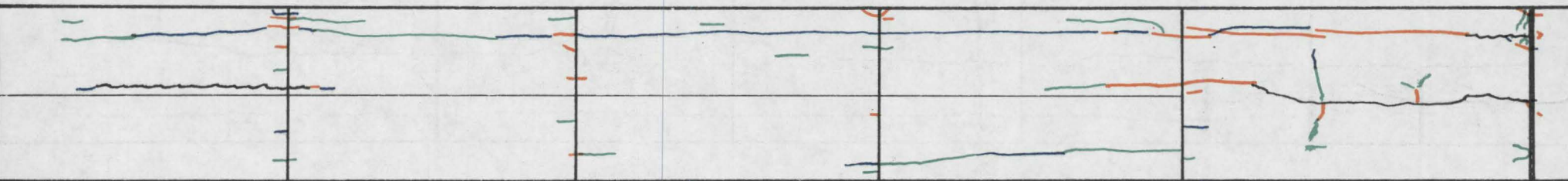
48

49

50

Expansion Joint

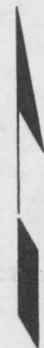
27



49 + 52

Transition

N

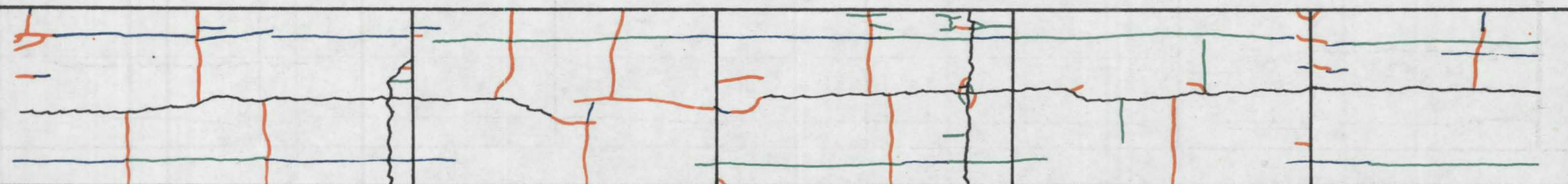




50 + 05

Section 13
(Fibrous)

Bond - Partial
Cement - 600 lb.
Fiber - 1", 60 lb.
Thickness - 3"



50

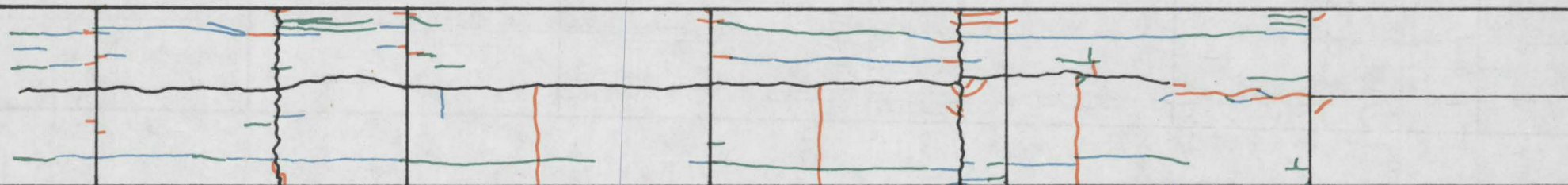
51

52

52

53

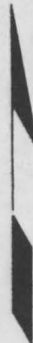
54



53 + 70

Transition

N



N

54 + 45

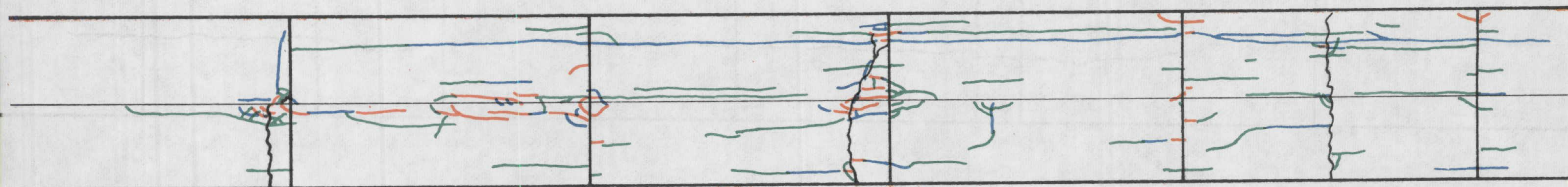
Section 14
(Fibrous)

Bond - Partial
Cement - 500 lb. + 234 lb. Fly Ash
Fiber - 1", 100 lb.
Thickness - 3"

54

55

56



56

57

58

57 + 48

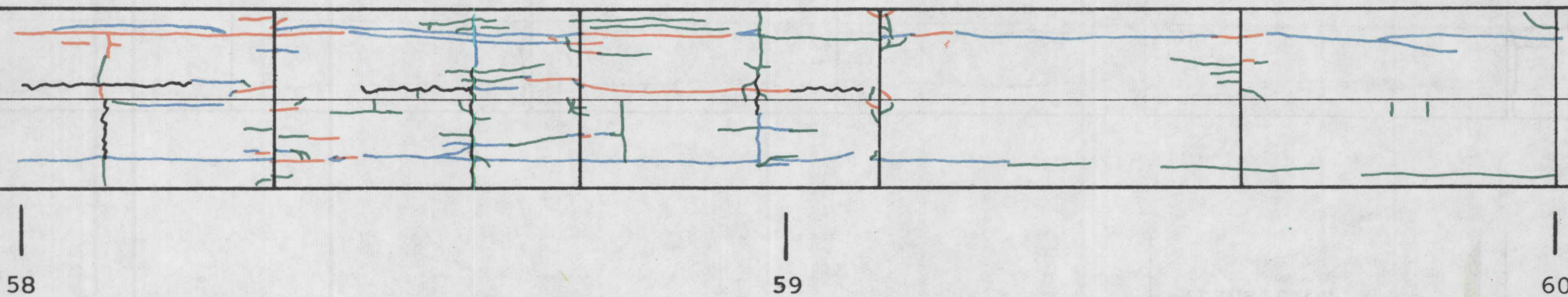
Transition

N

Section 15
(Fibrous)

Bond - Partial
Cement - 500 lb. + 234 lb. Fly Ash
Fiber - 2 1/2", 100 lb.
Thickness - 3"

N



60

61

62

Expansion Joint

61 + 64

Transition

N

N

62 + 15

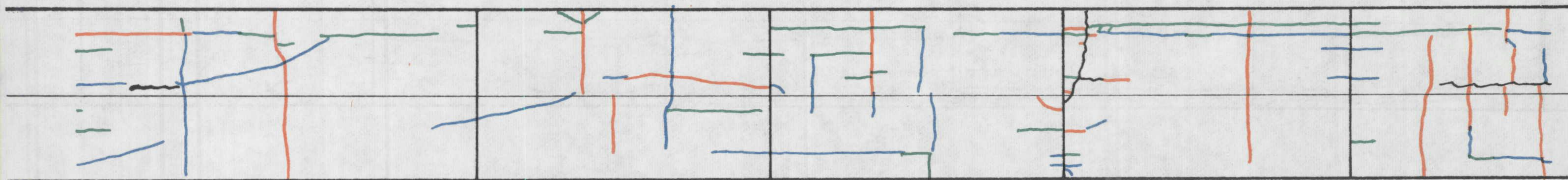
Section 16
(Fibrous)

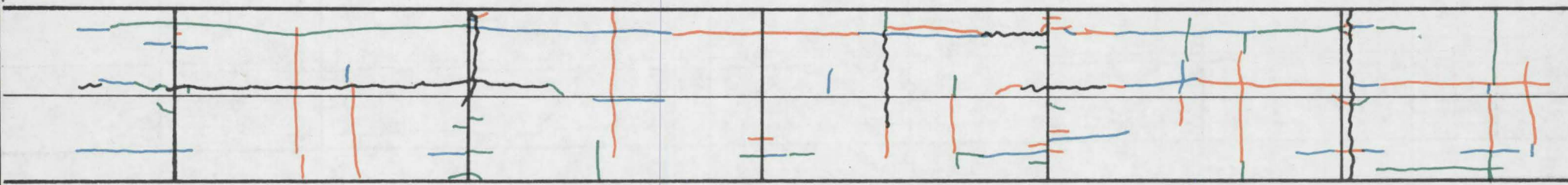
Bond - Partial
Cement - 600 lb.
Fiber - 2 1/2", 60 lb.
Thickness - 3"

62

63

64





64

65

66

65 + 72

Transition

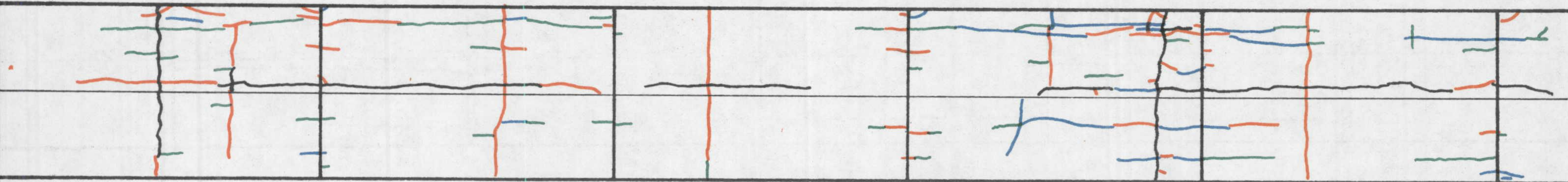
N



66 + 35

Section 17
(Fibrous)

Bond - Partial
Cement - 750 lb.
Fiber - 1", 60 lb.
Thickness - 3"



66

67

68

68

69

70

N
69 + 92



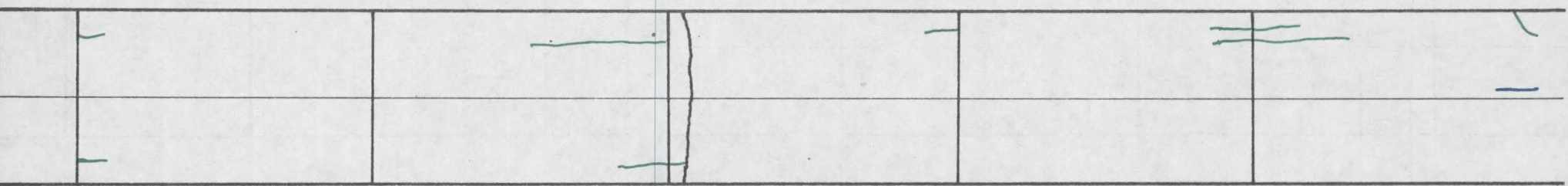
Section 18
(Fibrous)

Bond - Partial
Cement - 600 lb.
Fiber - 1", 160 lb.
Thickness - 3"

70

71

72



72

73

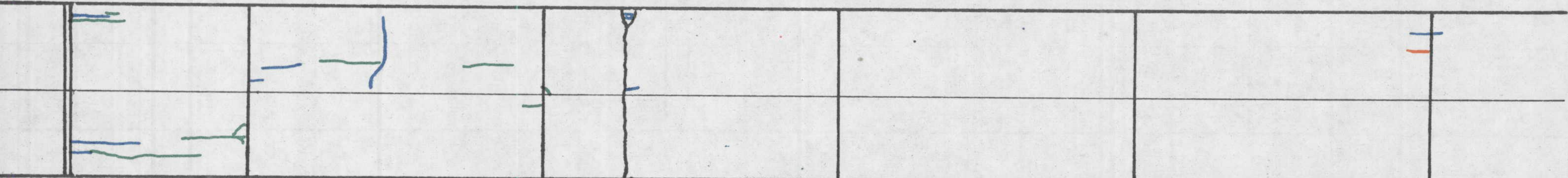
74



74 + 00

Section 19
(Fibrous)

Bond - Partial
Cement - 600 lb.
Fiber - 1", 160 lb.
Thickness - 3"



74

75

76

74

75

76

76

77

78

77 + 44

77 + 84

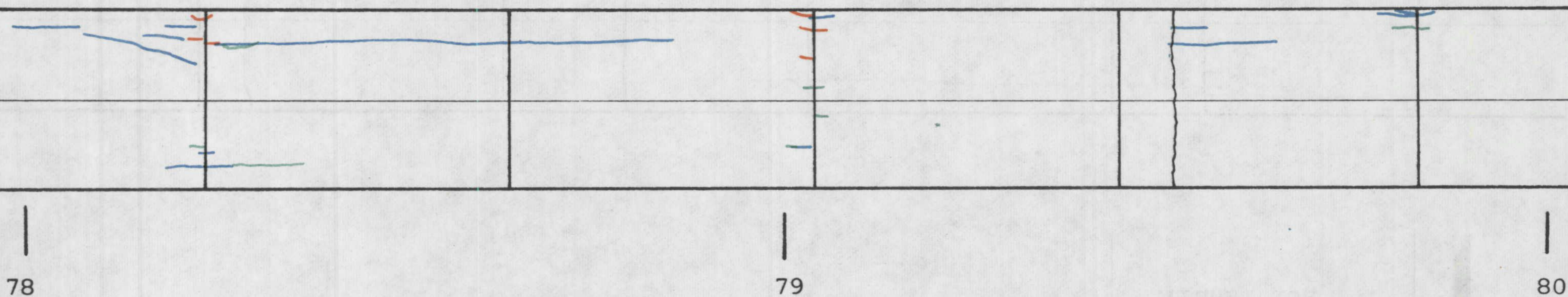
Transition

N



Section 20
(Fibrous)

Bond - Unbonded
Cement - 750 lb.
Fiber - 1", 160 lb.
Thickness - 3"



80

81

82

81 + 44

Transition

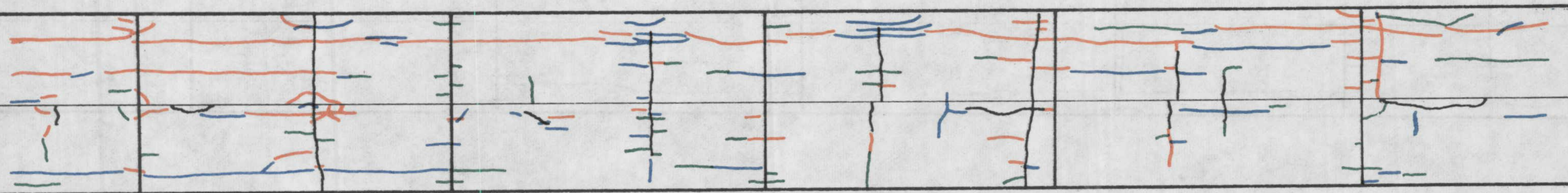
N



82 + 10

Section 21
(Fibrous)

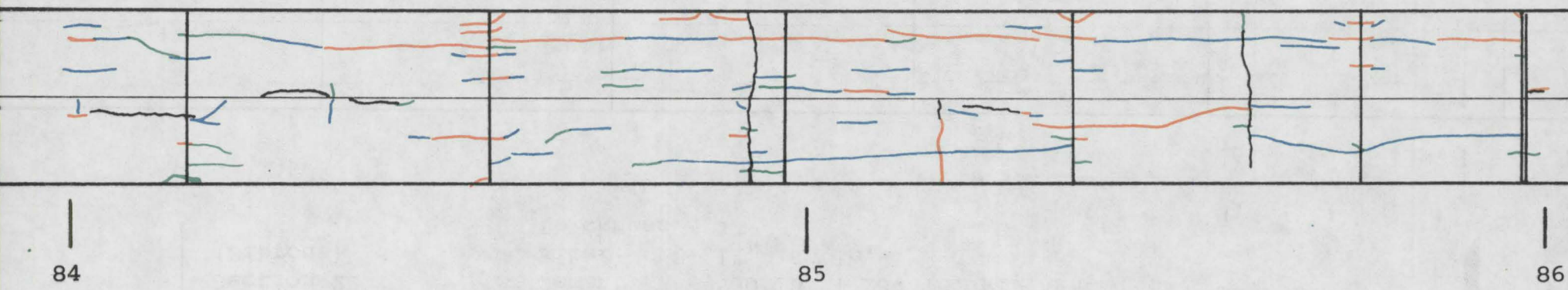
Bond - Bonded
Cement - 750 lb.
Fiber - 2 1/2", 100 lb.
Thickness - 3"



82

83

84



85 + 76
Transition
N



86 + 15

Section 22
(Fibrous)

Bond - On grade
Cement - 500 lb. + 234 lb. Fly Ash
Fiber - 1", 160 lb.
Thickness - 3"

86

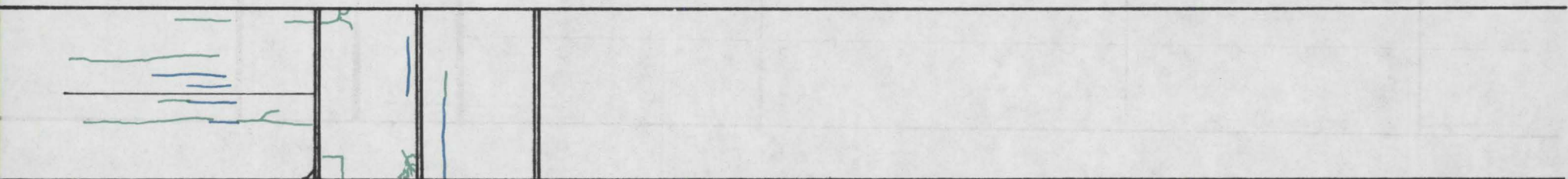
87

88



88 + 64

BRIDGE



88

89

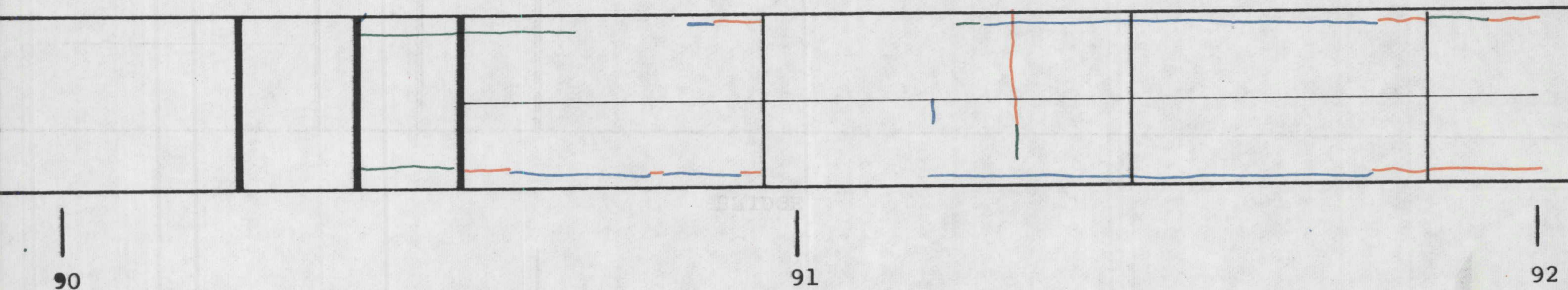
90

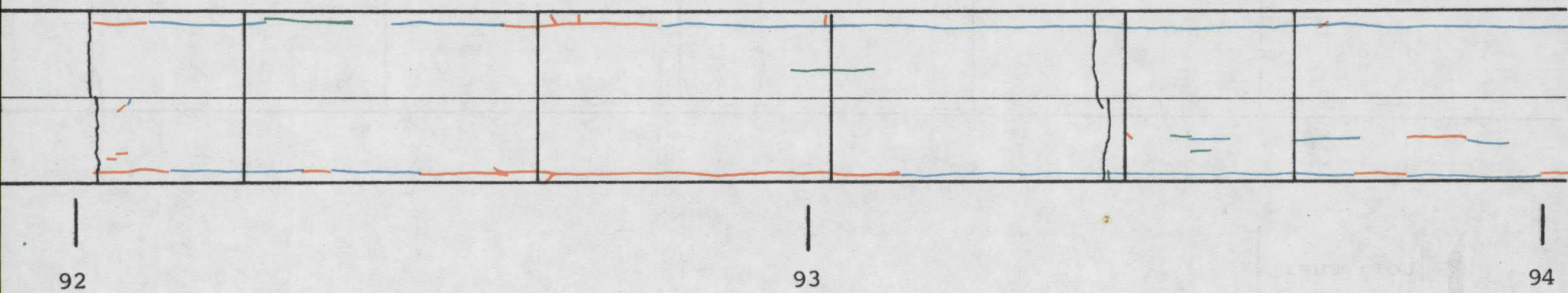


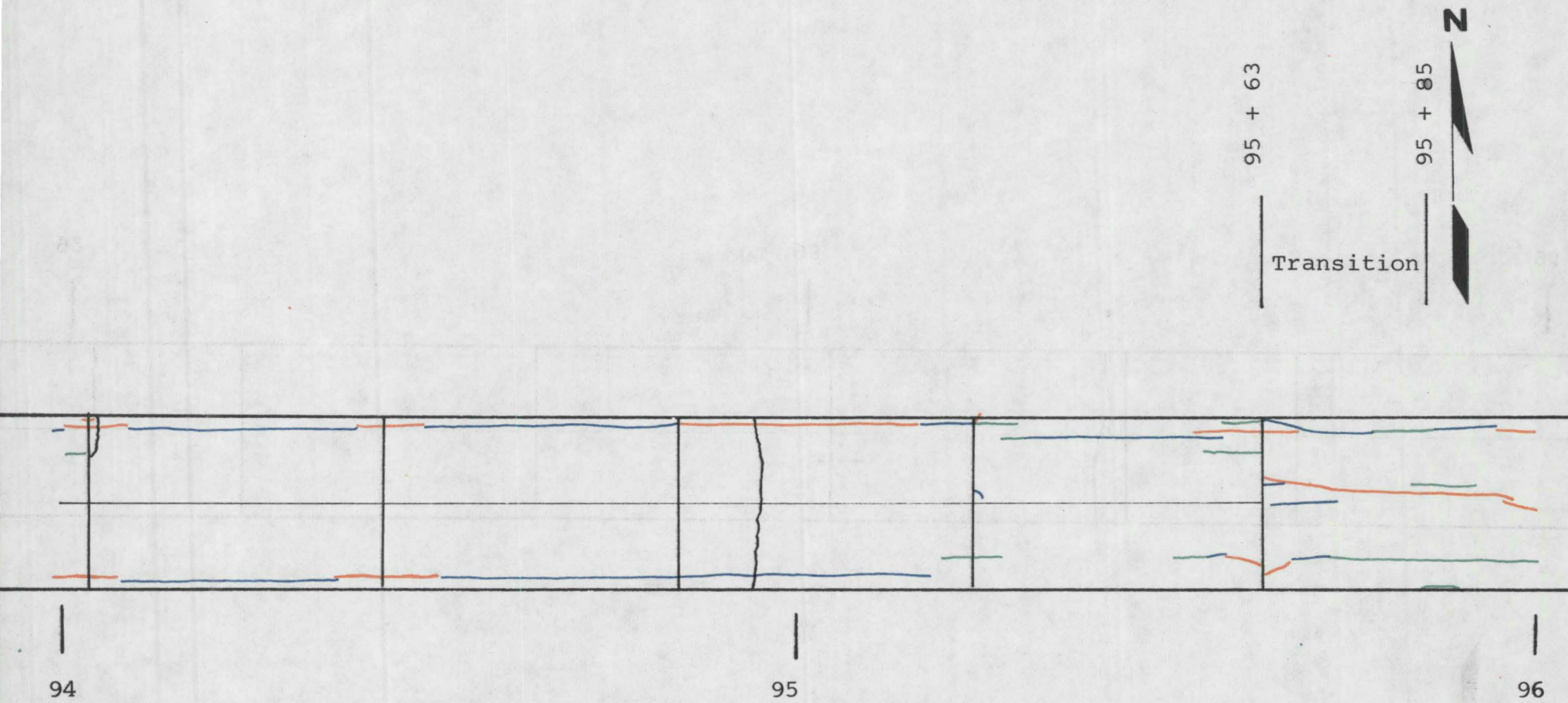
90 + 54

Section 24
(Fibrous Curb Section)

Bond - Partial
Cement - 600 lb.
Fiber - 1", 100 lb.
Thickness - 3"

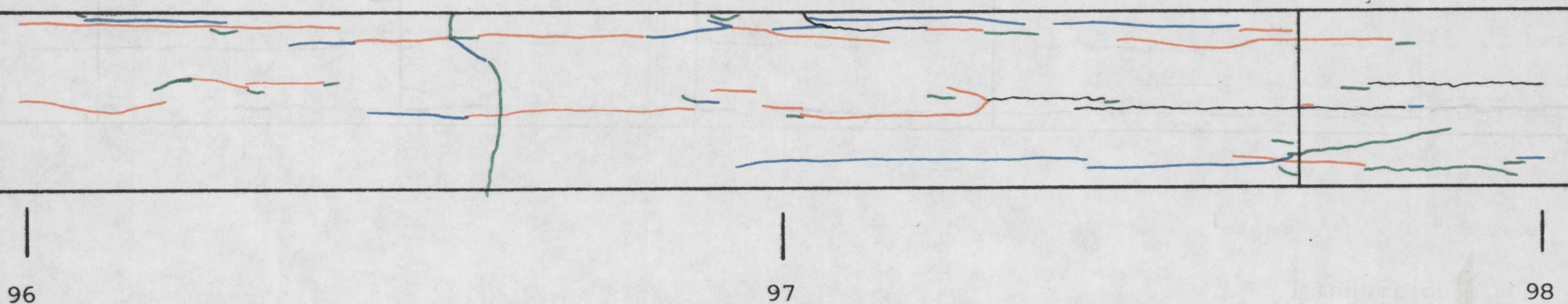






Section 25
(Fibrous)

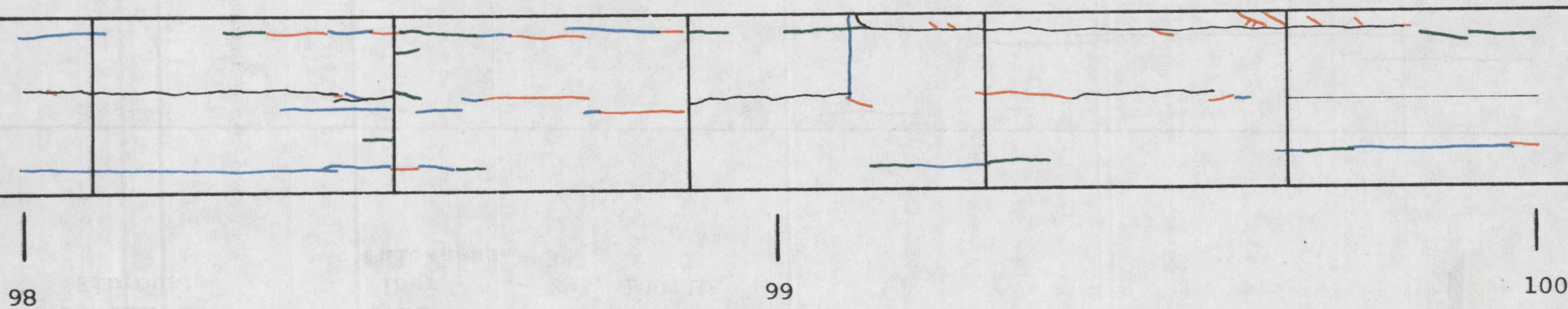
Bond - Unbonded
Cement - 750 lb. Chem. Comp.
Fiber - 2½", 100 lb.
Thickness - 3"





99 + 66

Transition



100 + 43

Section 26
(Fibrous)

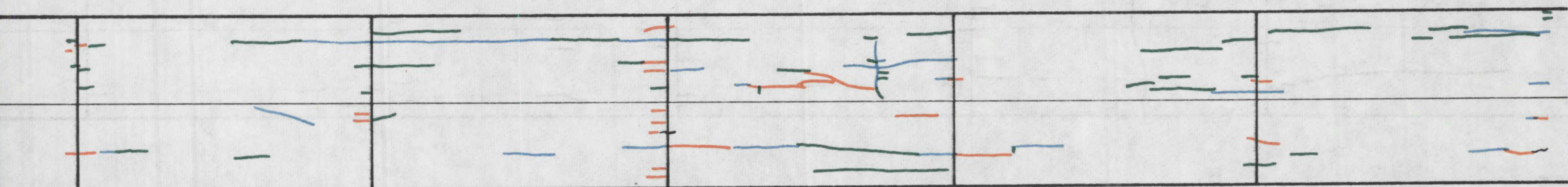
Bond - Partial
Cement - 750 lb.
Fiber - 2 1/2", 160 lb.
Thickness - 2"

N

100

101

102



102

102

103

103

104

104

104 + 00

104 + 32

Transition

Section 27
(Fibrous)

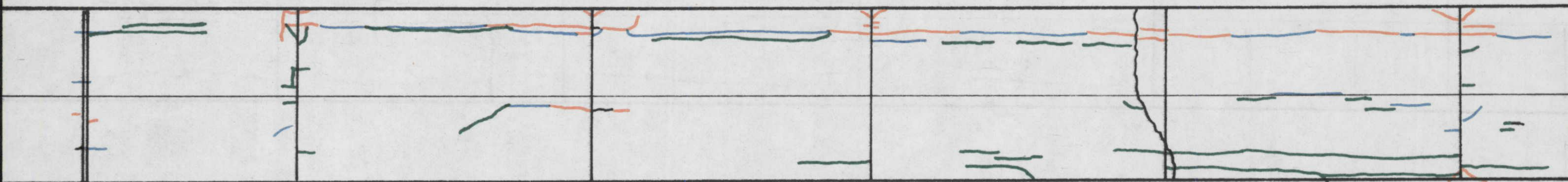
Bond - Partial
Cement - 600 lb.
Fiber - 1", 100 lb.
Thickness - 2"



104

105

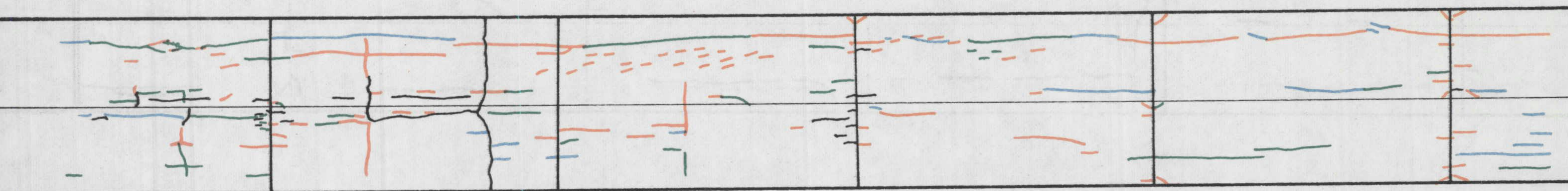
106



106

107

108



107 + 46

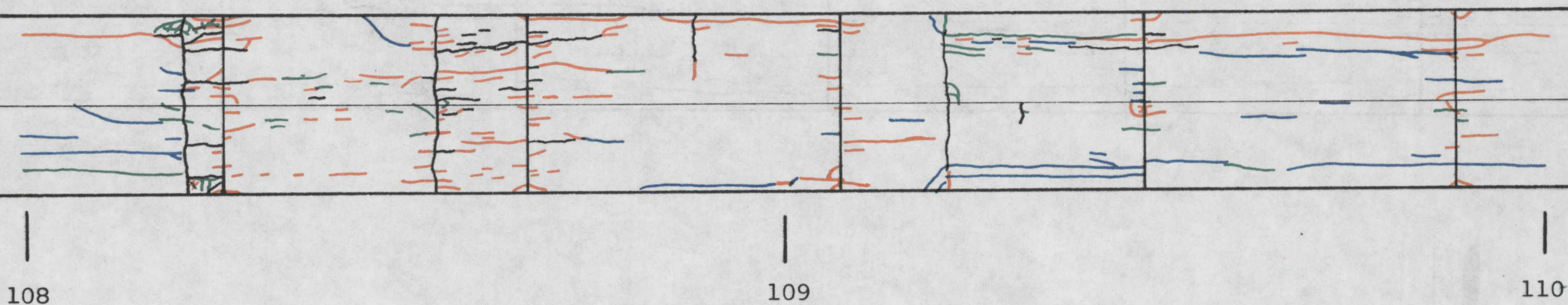
Transition

107 + 83

N

Section 28
(Fibrous)

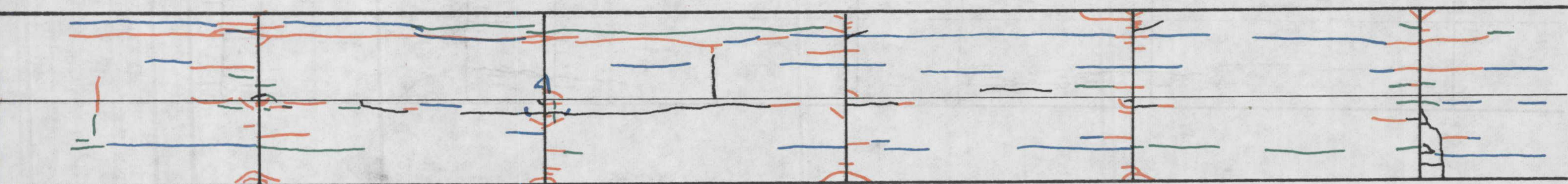
Bond - Partial
Cement - 750 lb.
Fiber - 1", 100 lb.
Thickness - 2"



110

111

112



111 + 85

N

112 + 04

Section 29
(Fibrous)

Bond - Bonded
Cement - 750 lb.
Fiber - 1", 100 lb.
Thickness - 2"

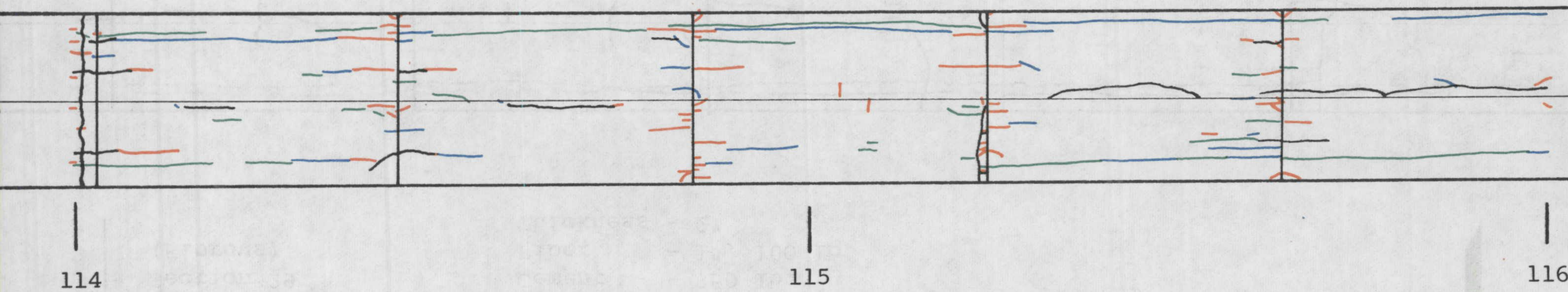
N

112

113

114

Z



114

115

116

116 + 00

Section 30
(Fibrous)

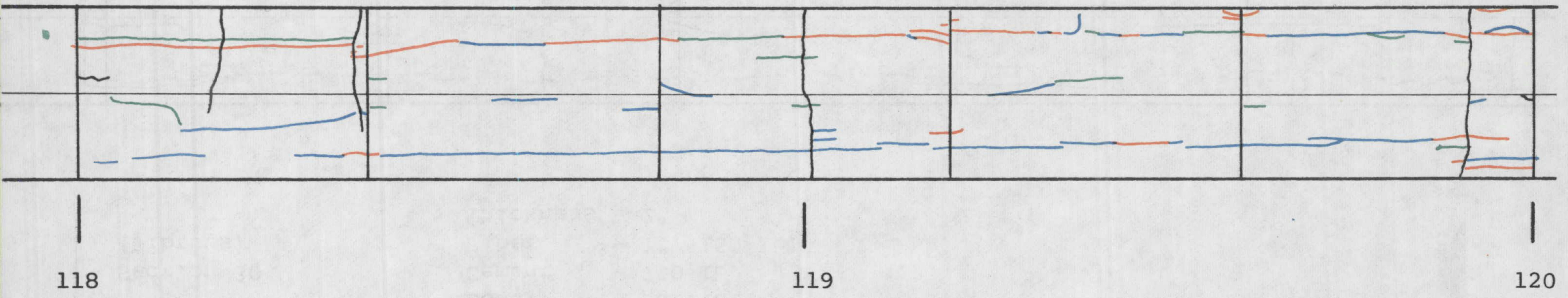
Bond - Partial
Cement - 750 lb.
Fiber - 1", 160 lb.
Thickness - 2"

N

116

117

118



119 + 50

Transition



120 + 00

Section 31
(Fibrous)

Bond - Partial
Cement - 600 lb.
Fiber - 1", 100 lb.
Thickness - 2"

N



120

121

122



123 + 41



Transition

123 + 00



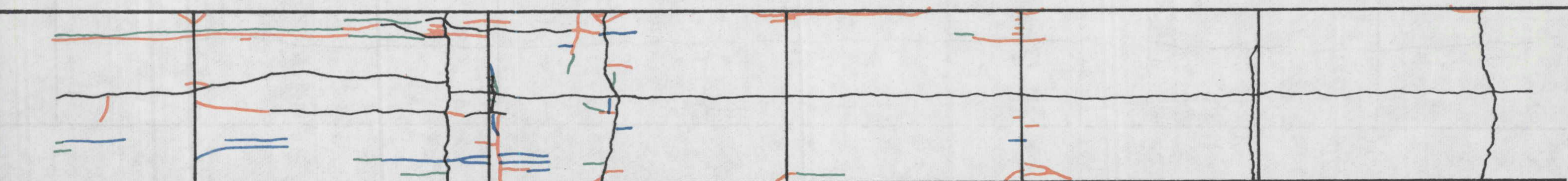
124



123

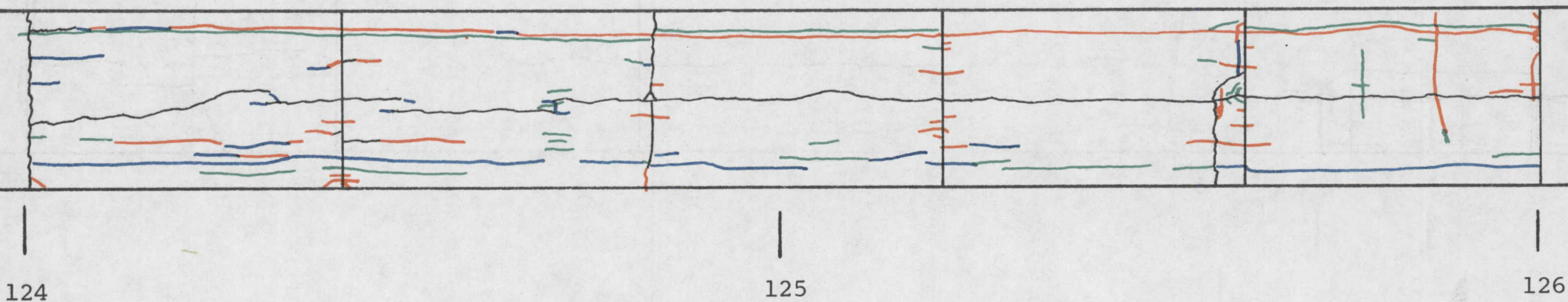


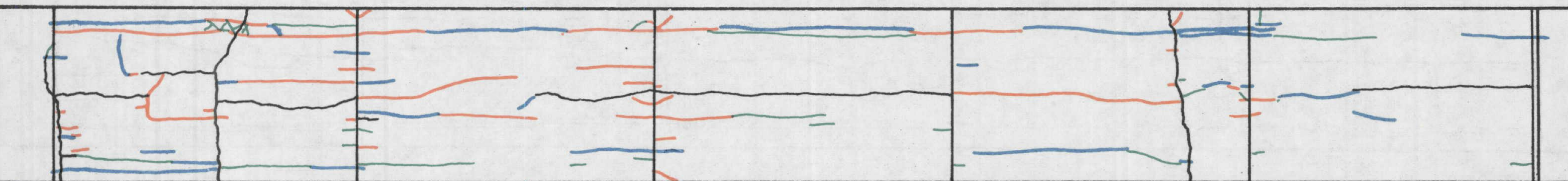
122



Section 32
(Fibrous)

Bond - Partial
Cement - 750 lb.
Fiber - 1", 100 lb.
Thickness - 2"





126

127

128

127 + 58

Transition

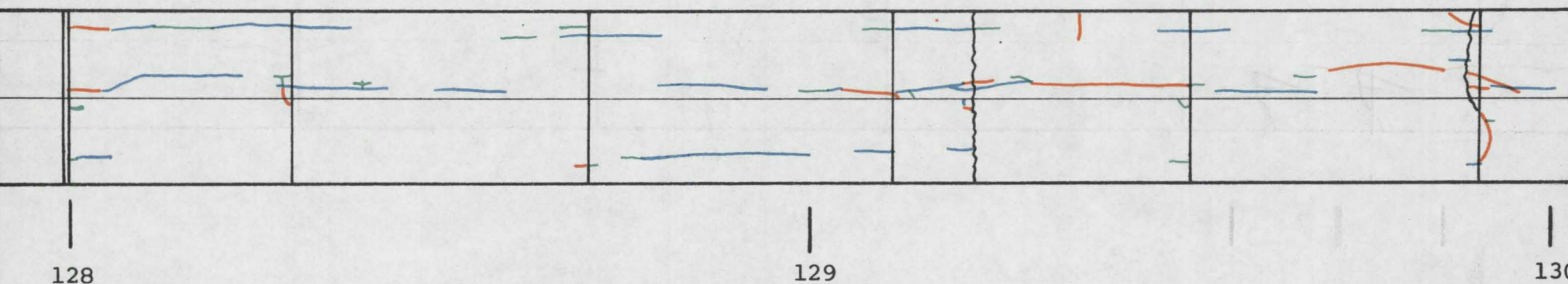
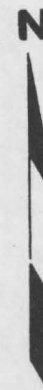
N

127 + 99

99

Section 33
(Fibrous)

Bond - Partial
Cement - 600 lb.
Fiber - 1", 160 lb.
Thickness - 2"

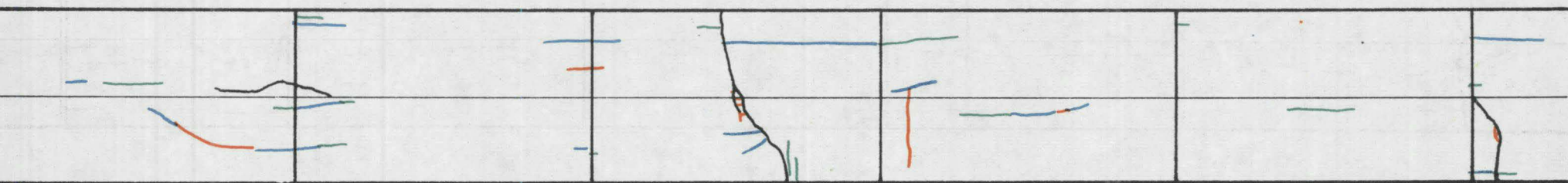


N
131 + 89

130

131

132



Transition

132 + 22

Section 34
(Fibrous)

Bond - Partial
Cement - 750 lb.
Fiber - 1", 160 lb.
Thickness - 2"

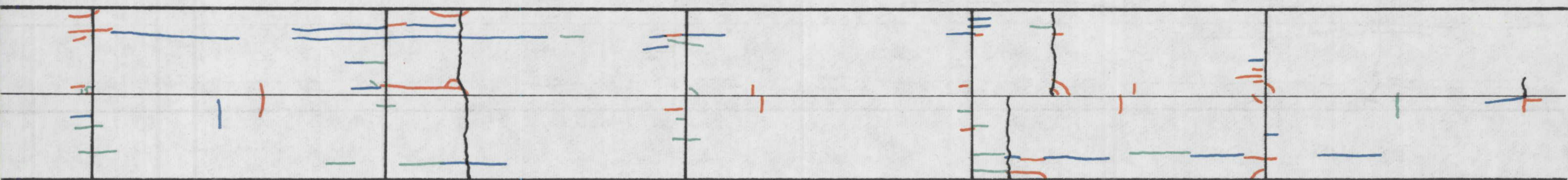
N

132

133

134

N



134

135

136

136 + 00

Transition

136 + 65

Section 35
(Fibrous)

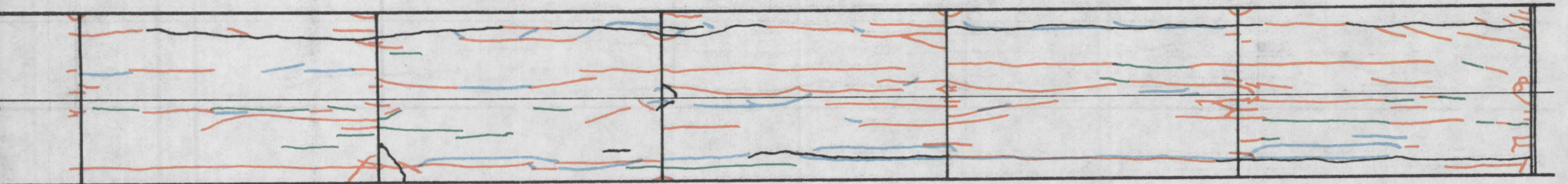
Bond - Unbonded
Cement - 750 lb.
Fiber - 2 1/2", 100 lb.
Thickness - 2"

N

136

137

138



138

139

140

140 + 00

Section 36
(Fibrous)

Bond - Bonded
Cement - 750 lb.
Fiber - 2 1/2", 100 lb.
Thickness - 2"

N

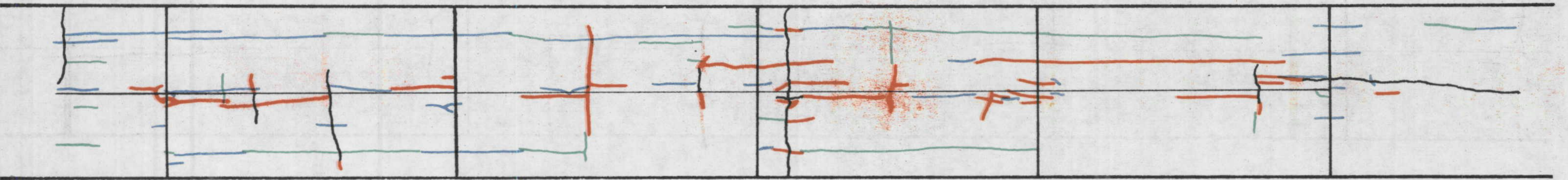
140

141

142



143 + 74



142

143

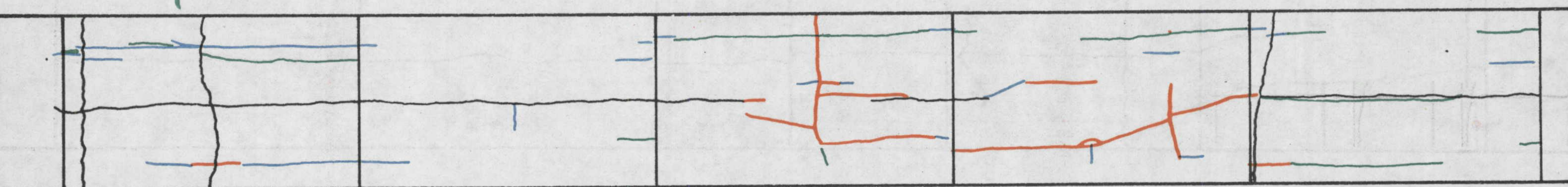
144

Transition

144 + 17

Section 37
(Fibrous)

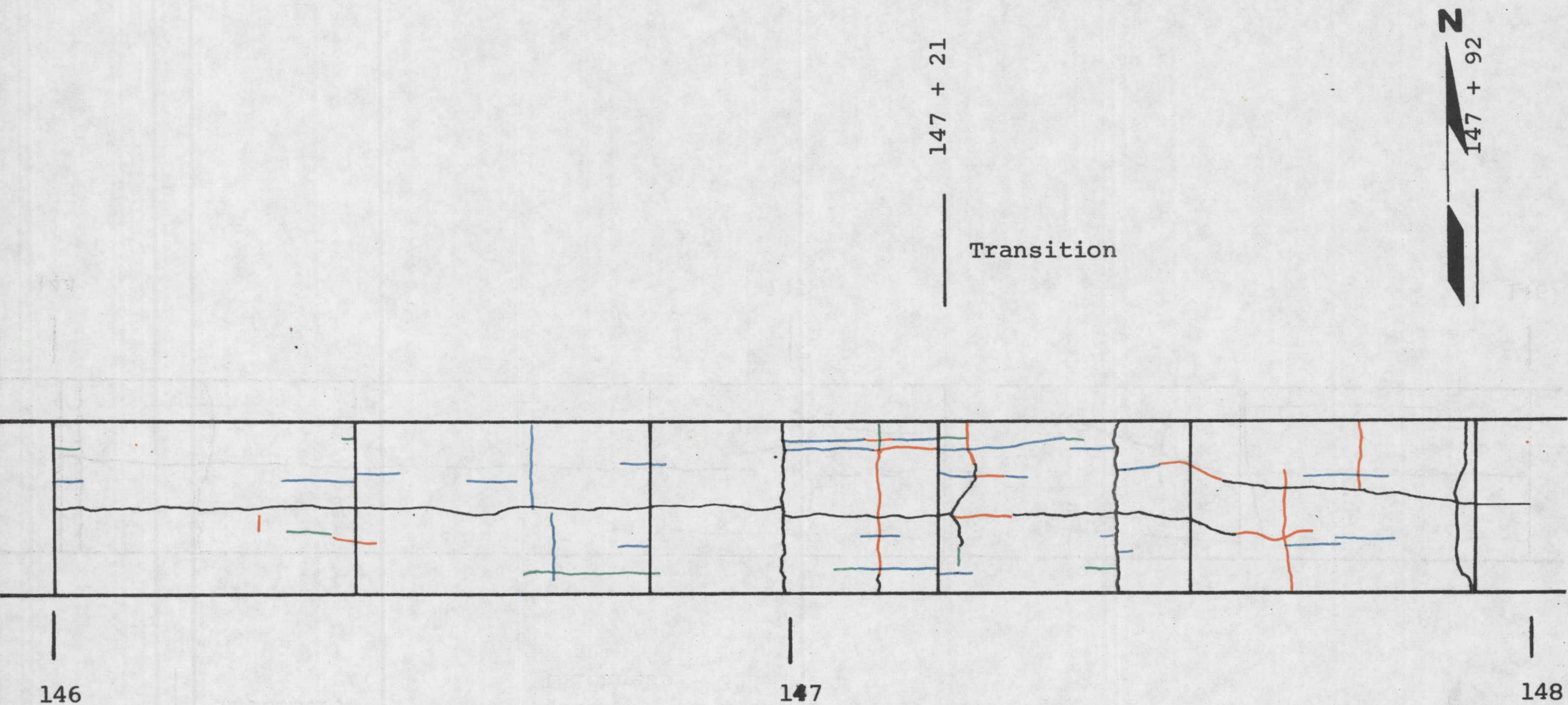
Bond - Partial
Cement - 600 lb.
Fiber - 2 1/2", 60 lb.
Thickness - 3"



144

145

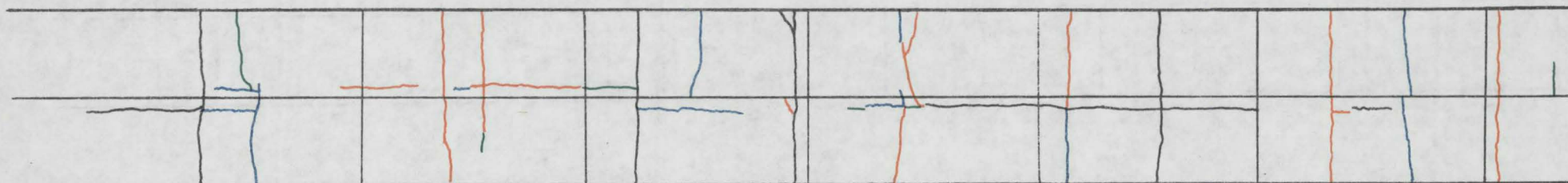
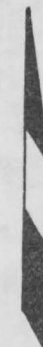
146



Section 38
(Mesh)

Pavement - A-4
Bond - Partial
Cement - 569 lb.
Thickness - 4"

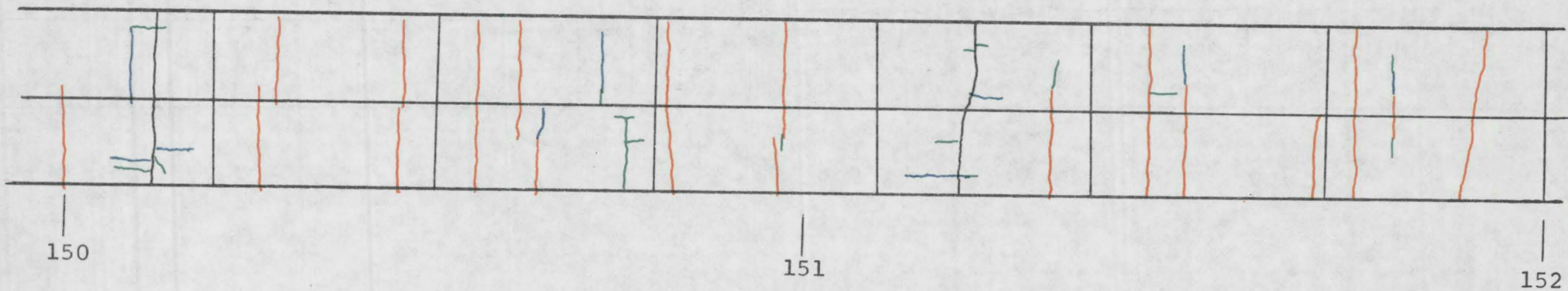
N



148

149

150

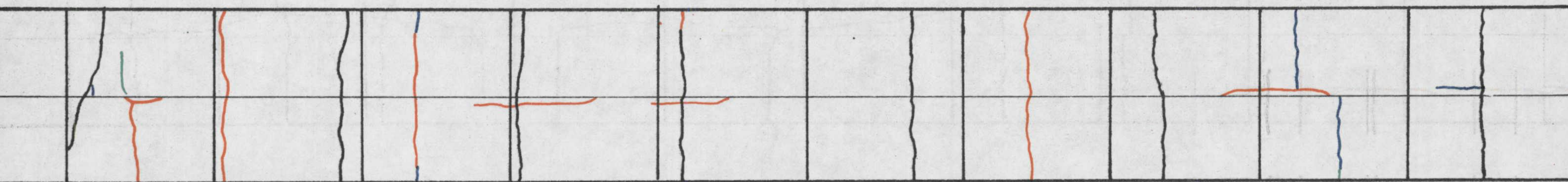


152 + 50

Section 39

Pavement - A-4
Bond - Partial
Cement - 569 lb.
Thickness - 5"

N



152

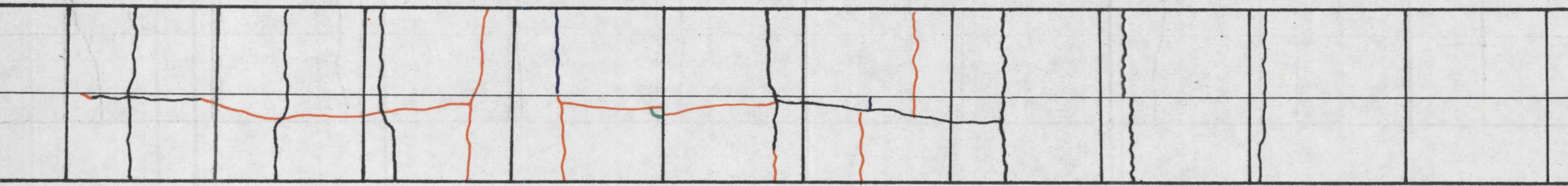
153

154

154

155

156



155 + 43

Transition

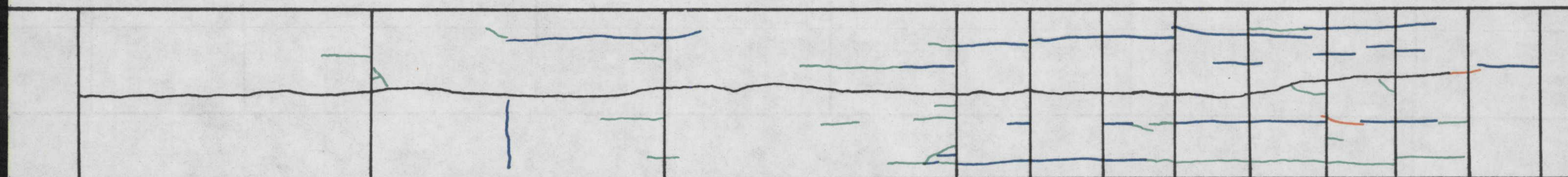
155 + 84

N

Section 40
(Fibrous)

Bond - Partial
Cement - 500 lb. + 234 lb. Fly Ash
Fiber - 1", 100 lb.
Thickness - 3"

N



156

157

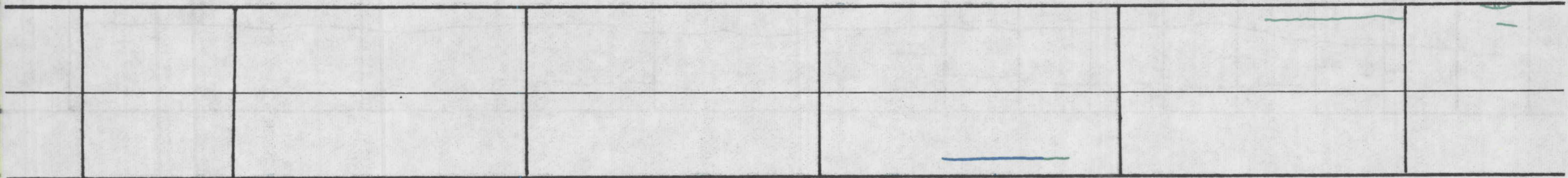
158



158 + 00

Section 40A
(Fibrous)

Bond - On grade
Cement - 500 lb. + 234 lb. Fly Ash
Fiber - 1", 160 lb.
Thickness - 3"



158

158

159

159

160

160

160

End of Project

Old Pavement

160 + 12

N